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Assignment on Massively Parallel Algorithms - Sheet 11

Due Date 23. 07. 2014

Exercise 1 (Sorting Networks, *4 Credits*)

a) Modify the bubble sort cuda implementation (single block) in the previous assignment (`assignment 10`) so that it can handle array lengths greater than 2 times the maximum number of threads per block for device (GPU) used (using multiple blocks).

b) Compare the runtimes of parallel version of bubble sort (implemented above) with the sequential version. Plot a graph of speed up (where speed up = runtime of sequential version / runtime of parallel version) along y axis vs size of input array along x axis. Interpret the plot and provide your arguments.

Hint: consider logarithm of size of input array along the x axis while plotting the above graph.

Exercise 2 (Inter-Block Synchronization , *Bonus Credits*)

a) Is it possible to achieve global synchronization of all threads in all blocks within a CUDA kernel method? Support your answer with appropriate arguments.